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ABSTRACT

A wavelength division multiplexing optical transmission apparatus for stabilizing wavelengths by feeding back the output of detection of wavelength fluctuations to the light source includes an optical filter which branches part of wavelength division multiplexed transmission lights from a plurality of optical transmitters, each including a semiconductor laser for oscillating signal lights having different wavelengths and modulated with different frequencies and a temperature controller for controlling the temperature of the semiconductor laser. The optical filter has a plurality of pass bands and transmits the branched components of the wavelength division multiplexed transmission lights, which are then collected, photoelectrically converted, and passed through band pass filters having as their respective pass bands the photoelectrically converted electrical signals. The output of each pass band is supplied to the temperature controller for controlling the temperature of the semiconductor laser modulated with the matching frequency. Each of the temperature controllers causes the temperature of the matching one of the semiconductor lasers to keep the outputs of the band pass filter at a constant level, and thereby stabilizes each of the wavelengths that the wavelength division multiplexed transmission lights contain.